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# OCCURRENCE OF *OCYTHOE TUBERCULATA* (CEPHALOPODA: OCYTHOIDAE) IN GREEK WATERS ***

KEY-WORDS: Cephalopoda, Octopoda, Ocythoidae, *Ocythoe tuberculata*, Mediterranean, Aegean Sea.

## Summary

The presence of *Ocythoe tuberculata* (Cephalopoda: Ocythoidae) is recorded for the first time in Greek waters, based on three adult females collected by fishermen along the coasts of the islands of Cos and Karpathos and of the Saronikos Gulf (Aegean sea, Eastern Mediterranean). The meristics of the three specimens are given, including beak dimensions.

## Riassunto

La presenza di *Ocythoe tuberculata* (Cephalopoda: Ocythoidae) è segnalata per la prima volta in acque greche, sulla base di tre femmine adulte catturate lungo la costa delle isole di Cos e Karpathos e del Golfo di Saronikos (Mar Egeo, Mediterraneo Orientale). Sono presentate le misure dei tre esemplari, incluse le dimensioni della mandibola inferiore.

## Introduction

*Ocythoe tuberculata* is the only species of the family Ocythoidae Rafinesque, 1814. It is a viviparous, epipelagic species, distributed in subtropical waters of the world, captured between the surface and 200 m of depth (GUERRA, 1992). This species is distributed in the Mediterranean Sea as well as in Atlantic, Indian and Pacific oceans (MANGOLD and BOLETZKY, 1987). Records of this species are reported mainly for the Western [Catalonian coasts, bay of Naples (SANCHEZ 1980, JATTA 1896, NAEF 1923)] and Central Mediterranean [North-Eastern Adriatic Sea, bay of Taranto, strait of Sicily (BELLO 1986, 1990, JEREB and RAGONESE 1993, PANETTA 1974)]. In the Levant basin (Eastern Mediterranean, East of 23° E) its occurrence has been recorded for the first time by ROBSON (1932) from the waters of Egypt and once more in 1988 by KATAGAN and KOCATAS (1990) from the Turkish waters (38°31' N, 26°38' E, bay of Izmir, Aegean Sea). The present records represent the second occurrence of *Ocythoe tuberculata* in the Aegean Sea and the first in Greek waters.

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Most of the published records of *Ocythoe tuberculata*, as those presented here, concern isolated females collected near the coasts in a few meters of depth (GONÇALVES 1991, PANETTA 1976, SANCHEZ 1980). The males, which are much smaller than females, are frequently found in a empty test of salps and doliolids which are used as a floating habitation (JATTA, 1896). Remains of *Ocythoe tuberculata* are found also in the stomach contents of large pelagic fishes and dolphins (GUERRA, 1992).

## Material and methods

Two females of *Ocythoe tuberculata* Rafinesque, 1814 were captured by fishermen near the Dodecanese Islands (South-Eastern Aegean Sea). One of them was collected in Mastichari (Island of Cos) (Fig. 1) on the 3rd of June 1992 and the second one was caught at 30 cm depth in Arkasas (Island of Karpathos) on the 25th of May 1993. The above specimens are kept in the Museum of Marine Animals of the Hydrobiological Station of Rhodes. Another female of this species was collected by a sport-fishermen at 10 m of depth in Pasalimani (Saronikos Gulf, Western Aegean Sea) on the 20th of June 1993 (Fig. 2).

The species was identified following the keys in MANGOLD and BOLETZKY (1987). Measurements of the three individuals were taken after preservation in formalin. The beaks of two specimens were removed and measured according to CLARKE (1962) (Fig. 3).

## Results

The measurements of the three specimens are presented in Table 1. It is to be underlined that the arms undergo to shrinking in preserved specimens; indeed, the total length of the fresh specimen A was 103 cm.

The value of the crest length/hood length ratio (CL/HL) determined for the lower beaks (1.54, 1.58) is between the value 1.48 obtained by SANCHEZ (1980) and 1.59 obtained by SMALE *et al.* (1993). Taking into account the relative measurements of the two specimens presented here and the ones described by SMALE *et al.* (1993) and SANCHEZ (1980), the following regression relating crest length with hood length of the lower beak (Fig. 4) is proposed for use in the species identification.

$$HL = 0.126 + 0.643\ CL \quad (r^2 = 0.99, n = 4)$$

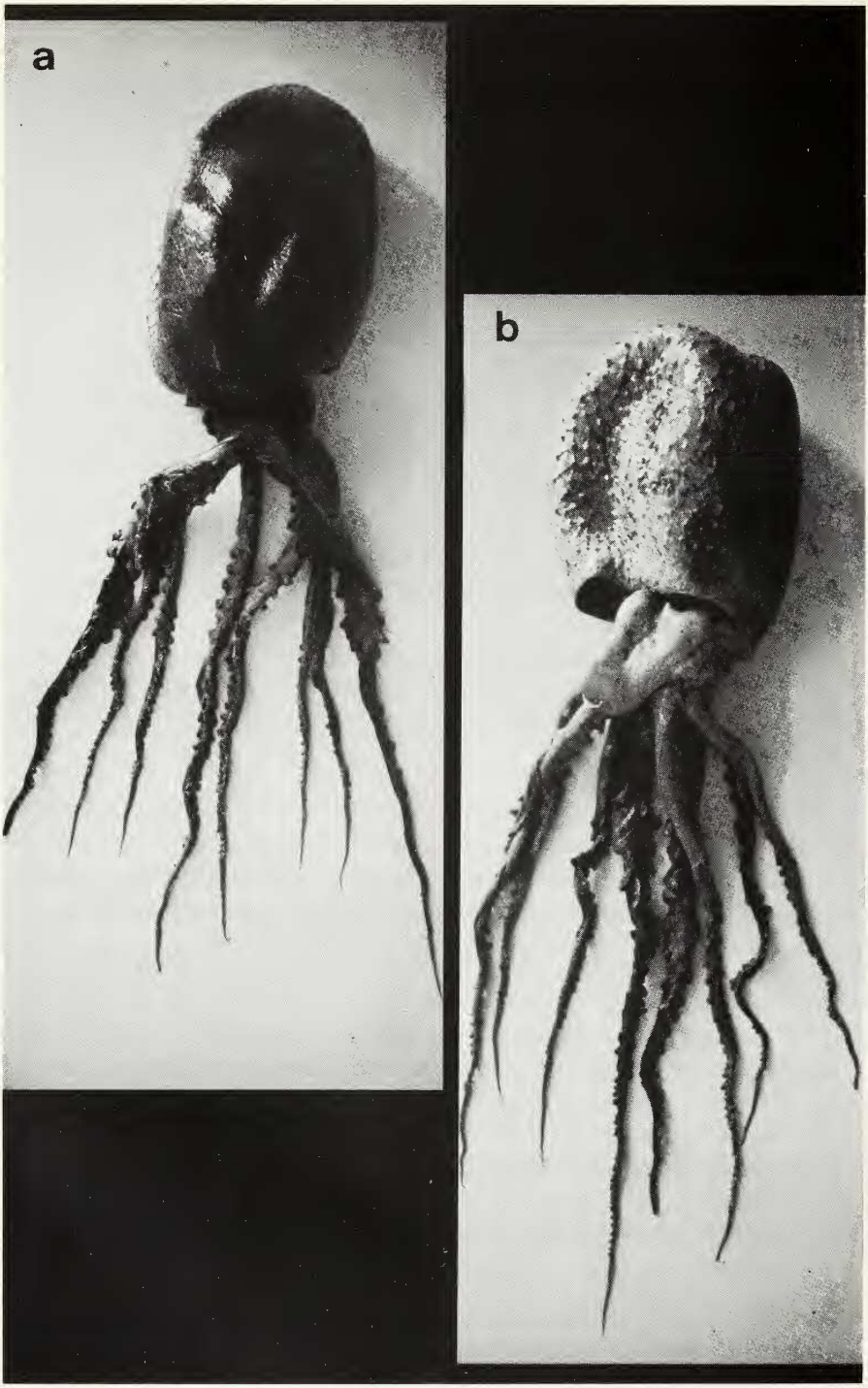


Fig. 1. Dorsal view (a) and ventral view (b) of *O. tuberculata* (specimen from Cos).

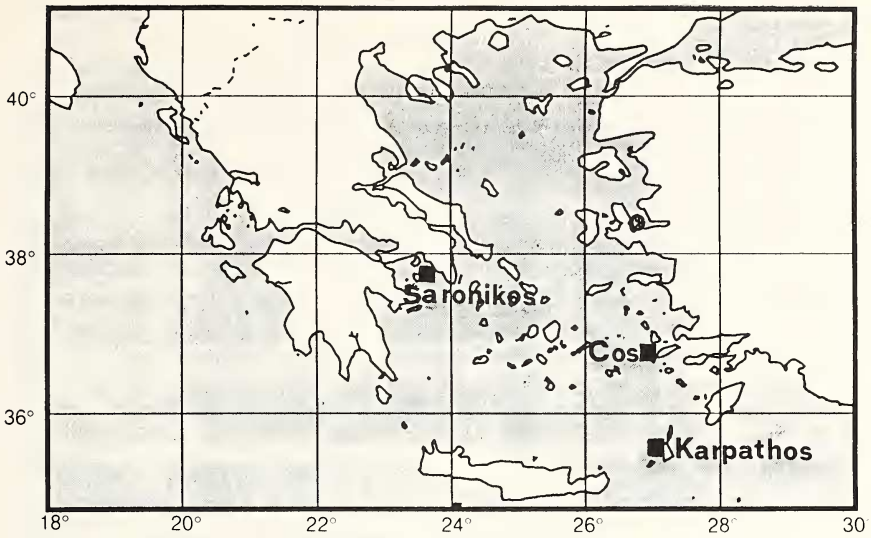


Fig. 2. Map of the Aegean Sea showing the localities where the *O. tuberculata* specimens were caught. [o = find by KATAGAN and KOCATAS (1990)]

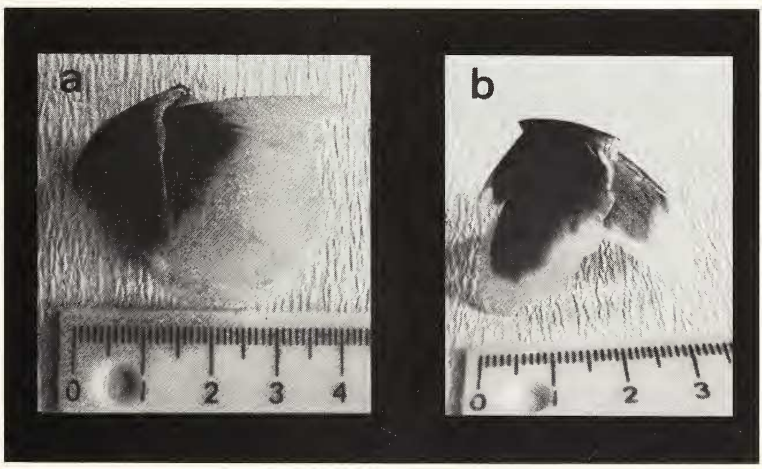


Fig.3. Lateral view of the upper beak (a) and of the lower beak (b) of *O. tuberculata* (specimen from Karpathos).

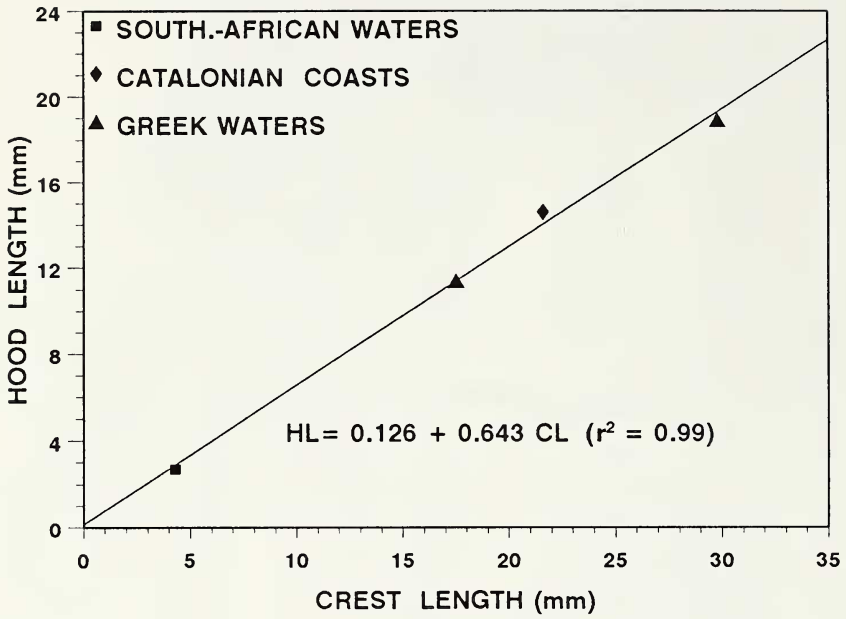


Fig. 4. Linear regression of crest length against hood length of the lower beak for *O. tuberculata*.

TABLE 1. Measurements carried out on *Ocythoe tuberculata* collected in Aegean Sea during 1992-93. A= specimen from Karpathos; B= specimen from Cos; C= specimen from Saronikos Gulf; U= upper beak; L= lower beak; BW= body weight, TL= total length; ML= mantle length; AL= arm length; CL= crest length; HL= hood length; RGL= rostral gap length.

| | BW | TL | ML | ALI | ALII | ALIII | ALIV | UCL | UHL | URGL | LCL | LHL | LRGL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | g | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| A | 4300 | 930 | 260 | 700 | 290 | 600 | 690 | 40.2 | 22.9 | 19.1 | 29.8 | 18.9 | 21.8 |
| | | | | | broken | | | | | | | | |
| B | 3250 | 850 | 290 | 550 | 450 | 440 | 530 | - | - | - | - | - | - |
| C | 765 | 585 | 185 | 430 | 380 | 375 | 455 | broken | 15.6 | 16.2 | 17.5 | 11.4 | 11.0 |

## Discussion

The records of *O. tuberculata* described in the present note confirm its wide distribution from the Western to the Eastern Mediterranean Sea including, at least, the South and Eastern Aegean Sea. The hydrology of the Aegean basin is influenced in its northern and western part by the Black Sea outflow whilst the southern and eastern Aegean region is under the domination of the northely-flowing Levantine surface water (GFCM, 1992). The distribution of *Ocythoe tuberculata* in the Aegean Sea may be related to the flow of the water originating from the Levantine Sea, along the Eastern coasts and the gyres standing in the Southern Aegean. A similar distribution of this pelagic octopod is confined to the North-Eastern side of the Adriatic Sea related to the Adriatic gyre (BELLO, 1990).

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## REFERENCES

BELLO G., 1986 - I Cefalopodi del Golfo di Taranto. *Lavori Soc. Ital. Malacol.*ogia **22**: 77-84.

BELLO G., 1990 - The Cephalopod Fauna of the Adriatic. *Acta Adriat.*, **31** (1/2): 275-291.

CLARKE M.R., 1962 - The identification of cephalopod "beaks" and the relationship between beak size and total body weight. *Bull. Br. Mus. nat. Hist.*, **8**(10): 421-480.

GFCM, 1992 - Fourth session of the Technical Consultation on Stock Assessment in the Eastern Mediterranean. Thessaloniki, Greece, 7-10 October 1991. *FAO Fish. Rep.*, 477, 172 pp.

GONÇALVES A., 1991 - The Octopoda (Mollusca: Cephalopoda) of the Azores. *Arquipelago*, 75-81 pp.

GUERRA A., 1992 - Mollusca, Cephalopoda. In Fauna Ibérica, Vol. 1. RAMOS, M.A. et al. (Eds). Museo Nacional de Ciencias Naturales. CSIC, Madrid, 327 pp., 12 plts.

JATTA G., 1896 - I Cefalopodi viventi nel Golfo di Napoli. *Fauna Flora Golf. Neapel*, 23, 1-269, + 31 plts.

JEREB P. & S. RAGONESE, 1994 - The Mediterranean Teuthofauna: towards a biogeographical coverage by regional census. II: Strait of Sicily. *Boll. Malacologico*, **30** (5-9): 161-172.

KATAGAN T. & A. KOCATAS, 1990 - Note préliminaire sur les Céphalopodes des Eaux Turques. *Rapp. Comm. Int. Mer Médit.*, **32**, 1: 242.

MANGOLD K. & S. v. BOLETZKY, 1987 - Céphalopodes. In Fischer W., M.-L. Bauchot et Schneider (Eds), Fiches FAO d'identification des espèces pour les besoins de la pêche. (Révision 1). Méditerranée et mer Noire. Zone de pêche 37. Vol. I. Végétaux et Invertébrés. FAO, Rome: 633-714.

NAEF A., 1921-23 - Fauna and Flora of the Bay of Naples. Monograph No. 35 Published for the Smithsonian Institution and the National Science Foundation, Israel Programm for Scientific Translations. Jerusalem, 1972. p. 725-737.

PANETTA P., 1974 - Osservazioni Ecologiche sui cefalopodi della costa Salentina (Golfo di Taranto). *Boll. Pesca Piscicolt. Idrobiol.*, **29**: 187-196.

ROBSON G. C., 1932 - A Monograph of the Recent Cephalopoda. Part II. The Octopoda. British Museum London. (quoted by W. J. Rees, 1955 - Note on the distribution of Cephalopods in the Eastern Mediterranean. *J. Conch.*, **95**: 83-85).

SANCHEZ P., 1980 - Nueva cita de *Ocythoe tuberculata* Rafinesque, 1814 (Cephalopoda: Ocythoidae) en las costas Catalanas. *Inv. Pesq.*, **44**: 111-119.

SMALE M.J., CLARKE M.R., KLAGES N.T. & ROELEVELD M.A.C., 1993 - Octopod Beak Identification-Resolution at a regional level (Cephalopoda, Octopoda: Southern Africa). *S. Afr. J. mar. Sci.*, **13**: 269-293.